REMARKS/ARGUMENTS

Responsive to paragraph 2 of the Office Action applicants respectfully request that the Information Disclosure Statement filed 10/9/01 be withdrawn from the instant application. Responsive to paragraph 3, an English version and new 1449 form are enclosed to place the Information Disclosure Statement filed 8/27/02 in compliance with 37 CFR 1.98.

The specification and drawing have been amended in response to the objections set forth in paragraphs 4 and 5 of the Office Action.

Responsive to the rejection of claims 3, 13-15, 20 and 22 under 35 USC 112, claims 3, 20 and 22 have been amended in a manner which is believed to overcome the rejection of the claims.

Reconsideration of the rejection of claims 1, 4, 5-8, 16, 17, 22 and 26 under 35 USC 102 in view of Madison et al is respectfully requested for the following reasons. The Examiner indicates that both the prior art disclosed in Madison and Madison's invention anticipate the present invention. In particular, the Examiner mentions col. 1, lines 14-16 and col. 9 lines 22-25 in Madison. Applicants wish to point out however, that this is far from being correct. The concept of prior art, at the time Madison's invention was made, was to coat/size the core fiber by passing it through a liquid medium containing the polymeric sizing agent as a solute. The present invention uses a solid filament polymer in the process of wrapping, and this difference has bearing on practically every aspect of the invention.

It seems to applicants that the Examiner overlooks the following lines 25-30, in col. 1, counting the faults of the prior art as viewed by Madison, among which is that the

polymeric size "must be applied from a hot size bath". Madison's main idea is to provide an improved film forming polymer, which is also applied from a solution, though at ambient temperature (col. 2, line 7, col. 8, lines 45-46).

Considering the sizing/coating process as described by Madison in further detail, col. 2, lines 3-15 and col. 8, lines 45-60, it is clearly seen that it is substantially different from that of the present invention. Besides the difference in the sizing/coating step in the production of the fabric, the present invention does not disclose wrapping multiple yarns at the same time (warp), a drying step of the combined yarn in an oven or heated rolls in order to dry the polymer size deposited on the core fiber or a step of separating the yarns' ends with a split or lease rods. In addition the continuous yarns are winded after sizing while in the present invention they are winded during wrapping in an assembly winding process.

Even with using wool yarns (col. 8, lines 61-68, col. 9, lines 1-3) with synthetic or specifically with acrylic acid copolymers, they would have clearly been sized/coated with such film forming polymers applied from a solution. The same applies for natural polymers. Applicants also note that Madison et al. advise the use of such polymers and others with the addition of two other components to the film forming solution, a surfactant and a lubricant (col. 2, lines 19-22), thus further changing the composition of the polymer film formed on the yarn.

Regarding the use of PVA in the prior art disclosed in Madison, the Examiner overlooks the difficulties Madison et al count in applying it from solution, i.e. unnecessary steps of cooking, application from hot bath and difficulties in

discarding the size after weaving (col. 1, lines 23-30). This is the reason why Madison et al do not use PVA or the other polymers in the prior art, and instead offers different polymeric materials applied under substantially different conditions.

With regard to dissolving the size after weaving (col. 9, lines 23-50), we note that Madison et al further add a unique formulation comprising alkanol H.C.S and sodium tripolyphosphate. Thus the polymer used by Madison would not have been dissolved and discarded in water as PVA without the presence of these additives.

In view of the foregoing, claims 1, 4, 5-8, 16, 17, 22 and 26 as amended are believed to patentably distinguish over Madison et al within the meaning of 35 USC 102 and 35 USC 103.

Reconsideration of the rejection of claims 1, 9-11, 13, 16 and 22 based on Somerville et al under 35 USC 102 is respectfully requested for the following reasons. The Examiner refers to two Examples, I and II, in Somerville et al in connection with the foregoing. In Example II, Somerville et al describe counter-clockwise twisting, relative to the twist direction of the wool yarn, of the polymer and wool yarns in order to untwist or twist back the wool yarn and support the fibers comprising it by the polymer yarn. Further, this counter twisting is made exactly with the same number of twists in order to achieve the untwisting effect, which is also known to those skilled in the art as zero twisting. In the present invention, however, the wool yarn is wrapped around by the polymeric filament in the bi-component process regardless of its original twist or the number of turns per unit length. Applicants further refer to Figure 4 relating to assembly-winding process of the present

application, in which one can clearly observe a clockwise wrapping of the polymer filament around the yarn, contrary to what is described in Example II in Somerville, that the polymer filament is wrapped counterclockwise around the yarn. Somerville et al further describe in Example II removing the support, the polymeric filament, under very accurate conditions, especially chosen for that polymer: an alkaline solution containing 1% sodium carbonate at 20°C. In sharp contract, the present invention uses water at 75°-95°C. Even if Somerville et al disclose a step of dissolving the polymer, they teach it should be applied under essentially different conditions.

The polymeric material that Somerville et al use is indeed related to cellulose. However, it may be considered anything but naturally occurring. Somerville et al describe in the background naturally occurring cellulosic derivatives soluble in organic solvents, which is mostly the natural case for organic materials. The polymer used belongs, in fact, to a class defined as "regenerated cellulose", that is natural cellulose that undergoes some transformation in order to be conveniently used in industrial and commercial applications. So is the polymeric material in Somerville, an aluminum salt of cellulosic hydroxy-fatty acids, which is soluble in an alkaline/aqueous medium. This polymer is especially designed for use by Somerville in the "existing machinery" of their time "employed in the manufacture of composite yarns and textile fabrics" (page 2, lines 102-1-4). The meaning of this is that Somerville et al acknowledge the limitation of the technology of his time, 60 years old, and claim a process applicable under its constraints.

In view of the foregoing, claims 1-9-11, 13, 16 and 22 as amended are believed to patentably distinguish over Somerville et al within the meaning of 35 USC 102 and 35 USC 103.

Reconsideration of the rejection of claims 1, 4, 11, 13-16 and 22 under 35 USC 102 based on Foster is respectfully requested for the following reasons. The basic difference between the two inventions, that the Examiner overlooks, is a distinguishing feature of the process and fabric in Foster's invention, namely the rubber backing film support. This component enables the woven fabric, to which it is attached upon heating, its extreme elasticity (Figure 6, col. 1, lines 1-4, col. 2, lines 27-31, col. 4, lines 10-22, col. 6, lines 16-19 etc.) together with the designed extreme elasticity of the woven fabric itself. Thus the two processes and products produced are essentially different.

Referring to the aspect of weaving, the Examiner relates mainly to Figure 1, showing a thin filament wrapped diagonally around a thicker one. The reference to Figure 1 in col. 2, lines 11-13, describes the relation between the wrapping polymeric material and the yarn filament as "a much smaller heat-shrinkable resinous filament". Further, in the description, col. 2, lines 47-55, Foster advises that "the lower the ply twist in the composite yarn, the greater is the degree of contraction when the fabric is heated subsequently". Foster, therefore, advises that the core yarn be wrapped as loosely as possible, since his aim is to produce an extremely elastic fabric. In the present invention, on the other hand, the polymeric filament is densely wrapped around the wool fiber in order to avoid loose ends and "live" yarns. The polymeric material, as recited in claim 1 of the present invention, is "shielding" the core fiber. Regarding the helicoidal fashion the polymer takes around the core fiber, as

depicted in Figure 1 in Foster, applicants notice that the polymer is loosely wrapped around the core fiber, thereby not fulfilling the shielding objective as recited in claim 1.

The Examiner relies upon Figure 1 in Foster for the teaching of the two methods of combining the yarn and the polymer, assembly winding and bi-component process (claims 14 and 15) and described in the specification on pages 8-9 of the present invention and in Figure 6. If the intention is to describe assembly winding then the two components are first combined "in parallel to one another" (page 9, lines 1-2, present invention) contrary to Figure 1 where the filament is curved around the core fiber during the combination step. If it is meant to describe a bi-component process, then it fails to show other features as the "gap of 14 mm (77) between the filament entrance and the front roller", (page 9, second paragraph) for example.

In addition, no disclosure of the method or apparatus of weaving can be found in Foster. One must, therefore, conclude that both Foster and the Examiner refer to the art and machinery of Foster's time that is 55 years old. It seems to applicants most unlikely that such a comparison would be valid in view of the rapid technological development in all areas of industry and in particular in that of textiles.

As to removing the polymer, Foster mentions at the place cited by the Examiner the possibility of disposing of the polymer by dissolving instead of melting, but does not disclose a step of dissolving. On col. 3, lines 8-10, Foster counts the necessary qualities of the polymer filament to be used among which is that the polymer "will melt or flow and disappear as a filament when heated to a somewhat higher

temperature". This strongly suggests that Foster's intention is to dispose of the polymer upon heating only.

Finally, and as is mentioned above, there is no resemblance between the products by process of the two inventions. The Examiner overlooks the rubber backing film support in Foster's product, which enables it together with the woven fabric elasticity its extreme elasticity (Figure 6, col. 1, lines 1-4, col. 2, lines 27-31, col. 4, lines 10-22, col. 6, lines 16-19 etc.). The two products are obviously different.

In view of the foregoing, claims 1, 4, 11, 13-16 and 22 as amended are believed to patentably distinguish over Foster within the meaning of 35 USC 102 and 35 USC 103.

Reconsideration of the rejection of claims 1, 2, 9-11, 13-16 and 20-22 under 35 USC 102 based on Johnson et al is respectfully requested for the following reasons. In the prior art disclosed in Johnson it is said that the yarns are twisted together with short cotton threads to form a composite. The cotton threads are then removed after weaving the fabric. In contrast, the present invention uses a continuous single "polymeric filament" (claim 1) to weave the fabric. The prior art cited by Johnson, therefore teaches a completely different process from that of the present invention.

Looking in the Figures in Johnson, it is obviously seen that their invention relates to a process of producing fabrics from a composite yarn comprising staple, short cellulosic fibers twisted together with a metal alginate filament in order to form a yarn that can withstand the strains in the weaving process. Johnson relates to this basic feature of his invention in many places in the text, as in col. 1, lines 25-

28 and lines 46-55, col. 3, lines 15-17 and col. 6, claims 2. This is contrary to the present invention where "a single wool yarn" is used to weave the fabric.

Johnson et al also disclose that the prior art teaches that after removing the polymer filament support the fibers forming the fabric do not maintain their twisted form and return to their original untwisted form, col. 1, lines 16-18, "leave the wool yarn. . .either twistless or deficient in twist". This quality is also known to those skilled in the art as zero twisting and is a basic feature in Johnson's invention as is noted in col. 3, lines 15-27, with the purpose of producing a softer more lustrous fabric. In the present invention the yarns are either further twisted to a higher-twist level when employing assembly winding where they are twisted prior to shielding or keep their twisted position in a twist level, which is also high, after weaving in a bi-component process where they are twisted during that process as in fiber roving.

Referring to the Figures in Johnson illustrating their process of weaving the fabric, applicants draw the Examiner's attention to col. 4, lines 16-40, describing these Figures. There it is said that first the core cellulose yarn is spun separately, then twisted together with the polymeric filament in opposite directions, then weaved into a fabric and then released from the filament and from the twisted configuration. Thus the final fabric is formed of interwoven fibers.

Regarding removing the cotton in the prior art cited in Johnson et al, this is made with sulphuric acid, that practically burns it, then it is dried and baked (carbonized) in order to turn the staple cotton into a disposable powder.

In Johnson et al invention the core fibers used are cellulosic. Johnson deliberately use this kind to avoid using wool fibers, which are resistant to acidic conditions, as is described in col. 3, lines 38-42. "The effects according to the present invention can be obtained with ordinary textile fibers of all kinds, including cotton, linen and viscose staple, and not simply acid-resistant fibers such as wool and mohair."

It is clear from the foregoing paragraph that Johnson et al do not intend to use wool in their invention. Applying wool to their improved process, will not present its advantages properly and in the best way possible. Further, Johnson et al point out on column 1, lines 20-24, that even acid-resistant wool fibers are liable to a certain damage caused by acidic solvents, and the use of such solvents should therefore be avoided. Thus, it is understood that in turning to other more acid-vulnerable fiber materials, Johnson et al do not intend to use wool fibers in their invention.

The polymer filament used by Johnson et al is indeed a derivative of a naturally occurring polymer, i.e. calcium alginate produced from alginic acid. However, Johnson et al use the alkaline salt of this polymer. That is, Johnson et al use a regenerated formula of this polymer instead of its native or natural form, which is specifically prepared for use in the textile industry.

In addition, the dyeing Johnson et al refer to on col. 3, lines 31-33, is merely noted to illustrate the advantage of getting twistless or zero twisted fabric with an increased lustrous appearance. For the case of supposedly post-dyeing, as concluded by the Examiner, it is also noted as an exemplary situation, where a different alkaline scour may be applied

instead of the one used as fatty alcohol sulphates with soda or a mixture of soap (col. 3, lines 72-73). In both cases, Johnson et al do not contemplate, as suggested by the Examiner, on dyeing as part of their invention.

Further applicants note, that as Johnson et al use acid for dissolving the polymer, then dyeing prior to weaving according to Johnson and removing the polymer by dissolving in acid will cause a change in color of the dyed fabric. Thus, even in the case that Johnson et al do contemplate on dyeing prior to weaving, they do not offer any solution for the color change effect.

As to the product by process, it is evidently different than the one claimed in the present invention, since it is made of twistless/zero twisted cellulose staple fibers and not of a single wool yarn.

In view of the foregoing, claims 1, 2, 9-11, 13-16 and 20-22 as amended are believed to patentably distinguish over Johnson et al within the meaning of 35 USC 102 and 35 USC 103.

Reconsideration of the rejection of claim 3 under 35 USC 103 based on Madison et al in view of Schultz et al is respectfully requested for the following reasons. Since claim 3 is dependent on amended claim 1 it is believed to patentably distinguish over Madison et al for the reasons given above in connection with claim 1. Furthermore, Madison actually teaches away from the present invention when applying polymeric sizes from a solution rather than solid yarn filaments. Madison's inventiveness is in modifying the conventional process of coating yarns prior to weaving by using polymers capable of dissolving in an aqueous medium at ambient temperature. In no place in Madison is there a reminder for the use of a polymeric solid wrapping yarn, which

makes a substantial difference in the process of shielding, weaving and discarding.

Schultz mentions the process of forming a twisted roving as part of the prior art, where such a process of forming wool yarns is long and costly (col. 1, lines 44-45). On col. 2, lines 29-41 and lines 48-51 Schutz disclose their invention wherein untwisted bundles of fibers, referred to as "roving" or "slivers" are pulled very strongly, flattened and glued together in a solution bath containing the size in order to avoid the twisting step (meaning the fibers in each roving or sliver). A skilled person in the art would have learned from a combination of Madison and Schutz only to use untwisted rather than twisted roving or sliver yarns, but essentially follow the steps of solution sizing as described in both Schutz and Madison. A combination of the two inventions does not teach wrapping a roving, either twisted or untwisted, with a solid filament yarn.

Accordingly, claim 3 is believed to patentably distinguish over Madison et al and Schutz et al within the meaning of 35 USC 103.

Reconsideration of the rejection of claim 18 under 35 USC 103 based on Madison et al is respectfully requested for the following reasons. Since claim 18 is dependent on amended claim 1, applicants incorporate by reference the arguments over Madison et al presented hereinabove. In addition, with regard to the temperature range of the polymer solvent in claim 18 of the present invention, Madison et al mention a temperature of 120°F (~49°C) used for desizing in all the Examples of the invention, (col. 9, line 43). On the same column, lines 16-19, Madison et al advise one of the benefits of the use of ambient temperature for sizing as "lower

corrosion rates for the equipment". In light of this recommendation and given a recommended temperature value, a skilled person in the art would have learned not to use higher temperatures at the desizing step at the very least to avoid damage to the machinery.

Accordingly, claim 18 is believed to patentably distinguish over Madison et al within the meaning of 35 USC 103.

Reconsideration of the rejection of claims 17-19 under 35 USC 103 based on Foster is respectfully requested for the following reasons. Claims 18 and 19, dependent on amended claim 1, are believed to patentably distinguish over Foster for the same reasons given hereinabove in connection with claim 1. Furthermore, applicants disagree with the Examiner's particular observation, regarding original claim 17, the subject matter which now is present in amended claim 1, that Foster does not disclose the solvent he uses, but an ordinary person skilled in the art would have probably used a water-based one should he decide to discard the polymer by dissolving. Foster demonstrates his invention with polymers as copolymer of vinyl chloride and vinyl acetate, polyethylene, and copolymer of vinylidene chloride and vinyl chloride (col. 3, lines 20-28), all not soluble in water-based solvents, but rather in organic solvents. There is no indication in Foster that water-soluble polymers or water-soluble salts of organic polymers may be used, and should a skilled person in the art have contemplated on removing by dissolving, he would have learned to use organic solvents and not water-based ones.

Regarding claim 18, it seems to applicants that the Examiner confuses between the steps of dissolving and

shrinking. The temperatures mentioned in Foster at the places indicated by the Examiner refer to the temperature range of the shrinking process, and therefore have nothing to do with the temperature range of the polymer dissolving process.

Regarding claim 19, Foster indeed does not disclose steam to shrink the yarns. However, contrary to claim 19 of the present invention, which claims a step of steam shrinking of the yarn prior to weaving, Foster discloses a step of heat shrinking of the fabric after weaving. Thus, a skilled person in the art would have to contemplate on replacing two elements, the source of heat and the order of steps of applying it. This would change the entire purpose of Foster's idea of producing an extremely elastic fabric, since such elasticity is essentially achieved when applying the shrinking step after weaving. Further, a skilled person in the art would have to assume that replacing both the heat source and alternating between the process steps would evidently lead to the product by process claimed in the present invention. Since Foster's product is a shrinkable elastic fabric comprising a rubber backing support, a skilled person in the art would also have to eliminate the rubber element from the invention in order to achieve a minimum required match to the product of the present invention. Such modifications really amount to inventing a whole new process and its product, which are entirely different than the ones taught by Foster.

Accordingly, claims 18 and 19 are believed to patentably distinguish over Foster within the meaning of 35 USC 103.

Reconsideration of the rejection of claim 12 under 35 USC 103 based on Somerville et al is respectfully requested for the following reasons. Since claim 12 is dependent on amended claim 1 it is believed to patentably distinguish over

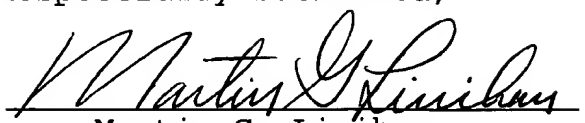
Somerville et al for the reasons given hereinabove in connection with claim 1. In addition, regarding the particular point of the wool yarn diameter, applicants draw the Examiner's attention to the use of "an extremely fine worsted yarn" of wool as disclosed in Example 1 on page 3, lines 6-7, in Somerville. This definition of the yarn quality indicates that Somerville et al intentionally use very thin fibers that correspond to the purpose of their invention, i.e. "an extremely light weight fabric, page 3, line 17. Applicants note that on page 9 of the present invention, last sentence of the second paragraph, there is disclosed the traditional wool yarn diameter being 15.5-16 microns, i.e. less than the range claimed in the present invention.

A skilled person in the art would have learned from Somerville that the thinner the yarn the finer is the woven fabric, and therefore would not have contemplated on turning onto thicker yarns containing fibers in the range of 17-21 microns. Somerville et al, therefore, teach away from the present invention, and a skilled person would have learned quite the opposite regarding the wool diameter.

Accordingly, claim 12 is believed to patentably distinguish over Somerville et al within the meaning of 35 USC 103.

In view of the foregoing, favorable action on this application is respectfully requested.

Respectfully submitted,

By 
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